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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/475,704	12/30/1999	SUSAN W. BARNETT	1631.002	6738

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EXAMINER	
PITRAK, JENNIFER S	
ART UNIT	**PAPER NUMBER**
1635	
MAIL DATE	**DELIVERY MODE**
08/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/475,704	BARNETT ET AL.	
	Examiner	Art Unit	
	Jennifer Pitrak	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,4-10,24-43,49-60,63-66 and 68-75* is/are pending in the application.

4a) Of the above claim(s) , is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,4-10,24-43,49-60,63-66 and 68-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/20/05, 10/03/00,*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/15/07 has been entered.

Status of the Claims

Claims 2, 4-10, 24-43, 49-60, 63-66, 68-75 are pending.

Applicant's traversal of rejections reiterated in the Advisory Action of 12/15/06 is acknowledged and has been considered by the examiner.

Priority

The instant claims have priority to application 60/152,195 filed 9/1/99.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re

Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Previous rejections

The double-patenting rejections of the instant claims over application 09/967,464 are withdrawn because the '464 application has been abandoned.

New rejections

Claims 2, 4, 41, 68, 69, and 74 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,602,705. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are to an expression cassette comprising a polynucleotide sequence operably linked to a promoter wherein the sequence comprises a sequence having at least 90% sequence identity to SEQ ID NO: 3 or 4 and compositions thereof. Claim 1 of Patent '705 is to an expression cassette comprising a polynucleotide sequence comprising a sequence having 90% sequence identity to SEQ ID NO: 20. SEQ ID NO: 3 of the instant application corresponds to nucleotides 10-60 of SEQ ID NO: 20 with 98% sequence identity. SEQ ID NO: 4 of the instant application corresponds to nucleotides 1-60 of SEQ ID NO: 20 with 98% sequence identity.

Claims 7-10, 24-40, and 71-73 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4, 11, 12, and 14-30 1 of U.S. Patent No. 6,602,705. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims of Patent '705 add the same limitations to claim 1 of '705 as claims 7-10, 24-40, and 71-73 add to claims 2 and 4 of the instant application, which are rejected as described above.

Claims 2, 4, 5, 7, 41, 68, and 70 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,211,659. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are to an expression cassette comprising a polynucleotide sequence operably linked to a promoter wherein the sequence comprises a sequence having at least 90% sequence identity to SEQ ID NO: 3 or 4 (claims 2, 4, and 41); wherein the sequence consists of or comprises SEQ ID NO: 3 (claims 5 and 68), wherein the cassette sequence further includes a nucleotide sequence encoding an HIV protease polypeptide (claims 7 and 70). Claim 1 of U.S. Patent No. 7,211,659 is to an expression cassette comprising a polynucleotide sequence encoding a polypeptide including an immunogenic HIV Gag polypeptide wherein the polynucleotide sequence encoding the Gag polypeptide comprises a sequence having at least 90% sequence identity to SEQ ID NO: 9, which contains nucleotides 1-1475 of SEQ ID NO: 3 of the present application (matching nucleotides 7-1481 of SEQ ID NO: 9 of '659) and contains a sequence with 94% sequence identity to SEQ ID NO: 4 of the present application (nucleotides 7-1363 of SEQ ID NO: 9 or '659). SEQ ID NO: 9 of claim 1 of '659 also contains a nucleotide sequence

encoding an HIV protease polypeptide as evidenced by comparing SEQ ID NO: 9 to Genbank accession no. AF202465.1, referenced in zur Megede, et al. (2000, J. Virology, v.74, on page 2629). Claims 24-40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 16-32 of U.S. Patent No. 7,211,659. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 16-32 of Patent '659 add the same limitations to claim 1 of '659 as claims 24-40 of the instant application add to claims 2 and 4, which are rejected as described above.

Claims 49, 50, 51, 52, 54, 55, 56, 57, and 58 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 35, 36, 40, 41, 43, 37, 38, 39, 44, and 45 of U.S. Patent No. 7,211,659. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 49-52 and 54-58 of the instant application are to a method of generating an immune response in a subject comprising introducing the composition of claim 41, which is rejected as described above, into a subject under conditions that are compatible with expression of the cassette in the subject and wherein the expression cassette is introduced using various vectors (claims 50-52 and 54-56) or wherein the composition is delivered via gene gun (claim 57). Claims of '659 are to a method of DNA immunization of a subject comprising introducing a vector comprising the expression cassette of the instant claims as indicated above wherein the vector is introduced using the same various vectors or gene gun as in the instant claims 5-52 and 54-57.

Claim Rejections - 35 USC § 112

Claims 2, 4, 7-10, 24-43, and 49-60 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Rejections are maintained for reasons reiterated in the advisory action of 12/15/06.

Response to Arguments

Applicants' arguments regarding the written description rejection of claims 2, 4, 7-10, 24-43, and 49-60, filed 06/15/07 have been fully considered but they are not persuasive.

Applicants, in arguments to the written description rejection of claims 2, 4, 7-10, 24-43, and 49-60, assert that the only activity that the Gag polypeptide encoded by the claimed molecules must exhibit is immunogenic activity and that therefore, the term "immunogenic HIV Gag polypeptide" is defined. Applicants further assert, "The skilled artisan would clearly recognize that an 'immunogenic HIV Gag polypeptide' is one that elicits a Gag-specific immune response," (pp.2-3). These arguments are not persuasive. As written, the claims are directed to polynucleotide molecules encoding Gag polypeptides that illicit a non-specific immune response, and that may or may not have Gag function, and that may or may not illicit a Gag-specific immune response. In fact, in Applicants' specification, at p. 20, lines 21-25, polypeptides "encoded by" a nucleic acid sequence are described as containing at least 3 to 5 amino acids. Thus, the immunogenic HIV Gag polypeptides may be as small as 3 amino acids, which may elicit a non-Gag-specific immune response, and which would not be part of the invention as

asserted by Applicant. For example, the claim is unclear as to which of all the possible 3-amino-acid peptides derived from SEQ ID NO: 3 would possess the claimed function. The specification lacks adequate written description of the specific structures of SEQ ID NO: 3 that are required for producing the claimed function of encoding an immunogenic Gag polypeptide.

Applicants assert that they are not required to re-describe the sequences of known immunogenic HIV Gag polypeptides as encoded by their polynucleotides in order to satisfy the written description requirement because the structure of the polypeptides were known. As applicant mentioned, the claims are to polynucleotides, which are not known. See also, Advisory Action, 12/15/06, p.2.

In response to Applicants' argument that possession of a genus is not determined by the amount of testing required and that the specification provides written description for every species of the claimed genus is not persuasive for reasons of record. See Advisory Action, 12/15/06, p.2.

Applicants' argument that reduction to practice is not required to satisfy the written description requirement is not persuasive. while it is correct that reduction of practice is not a per se requirement, in this case the specification does not disclose a correlation between the structure of the polynucleotides and the desired biological activity as described above.

Applicant's arguments regarding enablement, filed 06/15/07 have been fully considered and are found persuasive.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 4, 24, 25, 27, 39, 40, 41 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Schwartz, et al. (1992, J. Virology, v.66:7176-7182).

The claims are to an expression cassette comprising a polynucleotide sequence operably linked to a promoter wherein the polynucleotide sequence comprises a nucleotide sequence having at least 90% sequence identity to SEQ ID NO: 3 (claim 2) or SEQ ID NO: 4 (claim 4) and which encodes an immunogenic HIV Gag polypeptide. The claims are further drawn to a recombinant expression system comprising the cassette of claim 2 or 4 (claims 24 and 25) a cell comprising the expression cassette of claim 2 or 4 (claim 27), wherein the cell is an immortalized cell (claim 39) or, more specifically, a tumor-derived cell (claim 40), and to a composition comprising the expression cassette of claim 2 or 4 (claim 41).

Schwartz, et al. discloses the recombinant expression system comprising plasmid p17 containing a Gag nucleotide sequence and a transcription promoter (p.7176, Materials and Methods). As a part of a transfection composition, the plasmid is introduced into the HeLa cell-derived cells, HLtat, in which the Gag polypeptide is expressed (p.7177, Materials and Methods). The Gag nucleotide sequence in p17 is as follows (p.7179, Figure 4):

> (Genbank Accession number L04602)

ATGGGTGCGAGAGCGTCAGTATTAAGCGGGGGAGAATTAGATC
GATGGGAAAAAATTCGGTTAAGGCCAGGGGGAAAGAAGAAGT
ACAAGCTAAAGCACATCGTATGGGCAAGCAGGGAGCTAGAACG
ATTCGCAGTTAATCCTGGCCTGTTAGAAACATCAGAAGGCTGTA
GACAAATACTGGGACAGCTACAACCATCCCTTCAGACAGGATC
AGAGGAGCTTCGATCACTATACAACACAGTAGCAACCCTCTATT
GTGTGCACCAGCGGATCGAGATCAAGGACACCAAGGAAGCTTT
AGACAAGATAGAGGAAGAGCAAAACAAGTCCAAGAAGAAGG
CCCAGCAGGCAGCAGCTGACACAGGACACAGCAATCAGGTCAG
CCAAAATTAC.

The bold region is a nucleotide sequence having 90% sequence identity to SEQ ID NO: 3 of the instant application. The underlined region is a nucleotide sequence having 90% sequence identity to SEQ ID NO: 4 of the instant application. Therefore, the Gag nucleotide sequence disclosed by Schwartz, et al. meets the structural limitations of the claims by comprising a nucleotide sequence having at least 90% sequence identity to SEQ ID NOs: 3 and 4. Furthermore, since the prior art nucleic acid meets all the structural limitations of the claims, this nucleic acid is considered, absent evidence to the contrary, to "encode an immunogenic HIV Gag polypeptide" as claimed.

Thus, Schwartz, et al. anticipate each and every limitation of the instant claims 2, 4, 24, 25, 27, 39, 40, and 41.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-10 and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz, et al. (1992) as applied to claims 2 and 4 above, and further in view of Persson, et al. (1998, Biologicals, v.26:255-265).

The claims are to expression cassettes as described above, further comprising a nucleotide sequence encoding an HIV protease polypeptide (claim 7), an HIV polymerase polypeptide (claim 8), and the cassette wherein the reverse transcriptase and integrase regions have been deleted (claim 9) and wherein the encoded polypeptide comprises T-helper cell and CTL epitopes (claim 10) (defined on p. 12 of specification as including at least about 12-20 amino acids). The claims are further drawn to a recombinant expression system comprising the cassette of claim 2 or 4 operably linked to control elements including a transcription promoter (claims 24 and 25), wherein the promoter may be a metallothionein promoter (claim 26), and to a

cell comprising the expression cassette of claim 2 or 4 (claim 27), wherein the cell is mammalian (claim 28) and may be VERO cells (claim 29).

The teachings of Schwartz, et al. are described in the 102 rejection over this reference. Schwartz et al. do not teach the expression cassette further comprising a nucleotide sequence encoding an HIV protease or polymerase polypeptide, nor nucleotide sequence encoding an HIV polymerase polypeptide wherein the reverse transcriptase and integrase coding regions are deleted. Schwartz, et al. also does not teach the inclusion of specific promoters, including the metallothionein promoter, in the recombinant expression system, nor does Schwartz, et al. teach use of specific mammalian cells (listed in claim 29), including VERO cells.

Persson, et al. teach various modifications of the known immunogenic HIV expression construct, pMTHIV (p.256, Materials and Methods), which encodes HIV protease and polymerase. Figure 1 on p.257 shows pHIV-BRU, which contains the *pol* gene with deleted reverse transcriptase and integrase regions. The expression constructs, including pHIV-BRU, contain the metallothionein promoter and other control elements including an SV40 termination and polyA addition sequences (see Fig. 1). pHIV-BRU was expressed in VERO cells (p.258). Persson, et al. also teach that such expression constructs are useful for enhancing safety and immunogenicity of immunogenic HIV constructs.

Given that the instant application is directed to antigenic HIV polypeptides, it would have been obvious and one would have been motivated to include such structural elements as disclosed by Persson, et al. in the instant expression cassettes due to the improved safety of the elements and with the expectation of success provided by the results of Persson, et al.

Thus, the invention of claims 7-10 and 24-29 would have been obvious, as a whole, at the time of the invention.

Closing

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Pitrak whose telephone number is 571-270-3061. The examiner can normally be reached on Monday-Thursday, 7:30AM-5:00PM, ALT. Friday, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Schultz can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSP

Christopher Low
Director TC 1600 (acting)

Jennifer Pitrak
Examiner, Art Unit 1635